

# BS-220E

## Chemistry Analyzer

### Technical Specifications

<b>System Function:</b>		<b>ISE Module (optional):</b>	
Automatic, Discrete, Random Access STAT sample priority		Measure K <sup>+</sup> , Na <sup>+</sup> , Cl <sup>-</sup>	
Throughput:	Constant 200 tests/hour (without ISE), up to 330 tests/hour with ISE	<b>Optical System:</b>	
Principles:	Absorbance photometry, Turbidimetry, Ion Selective Electrode technology	Light Source:	Halogen-tungsten lamp
Methodology:	End-point, Fixed-time, Kinetic, optional ISE	Photometer:	Grating system, reversed optics
	Single/Dual reagent chemistries, monochromatic/bichromatic	Wavelength:	12 wavelengths, 340nm, 380nm, 412nm, 450nm, 505nm, 546nm, 570nm, 605nm, 660nm, 700nm, 740nm and 800nm
Programming:	Linear/non-linear multi-point calibration	Absorption range:	0~3.3Abs (10mm conversion)
	Open system with user defined profiles and chemistry calculation	Resolution:	0.0001Abs
System pack reagents ready to use		<b>Reaction System:</b>	
<b>Reagent/Sample Handling:</b>		Reaction rotor:	Rotating tray, containing 80 cuvettes
Reagent/Sample tray:	40 reagent positions, 40 sample positions in cooling compartment (2~12°C)	Cuvette:	Reusable, optical length 5mm
Reagent volume:		Reaction volume:	150~500µl
R1:	10~350µl, step by 1 µl	Reaction temperature:	37°C
R2:	10~200µl, step by 1 µl	Temperature fluctuation:	±0.1°C
Sample volume:	2~45µl, step by 0.1 µl	<b>Mixing System:</b>	
Reagent/Sample probe:	Liquid level detection and tracking, vertical & horizontal collision protection and inventory checking	Standalone mixing bar	
Probe cleaning:	Automatic washing of interior and exterior	<b>Cuvette Washing:</b>	
	Carry-over < 0.1%	8-step washing station with pre-heated detergent and water	
Automatic sample dilution:	Pre-dilution and post-dilution Dilution ratio up to 1: 200	<b>Control and Calibration:</b>	
<b>Internal Bar Code Reader (optional):</b>		Calibration mode:	Linear (one-point, two-point and multi-point), Logit-Log 4P, Logit-Log 5P, Spline, Exponential, Polynomial, Parabola
Used for sample and reagent scan		Control software:	Westgard multi-rule, Cumulative sum check, Twin plot, L-J Chart
Applicable to various bar code systems such as Codabar, ITF (Interleaved Two of Five), code128, code39, UPC/EAN, Code93		<b>Operation Unit:</b>	
Bi-directional interface LIS transmission		Operation system:	Windows® XP Professional/Home SP2 or above Windows® 7
		Interface:	RS-232
		<b>Working Conditions:</b>	
		Power Supply:	AC 200~240V, 50/60Hz, ≤1500VA or AC 100~130V, 50/60Hz, ≤1500VA
		Temperature:	15-30°C for operation
		Humidity:	35-85% RH
		Dimension:	860mm (W) x700mm (D) x625mm (H)
		Weight:	130 Kg



# BS-220E

## Chemistry Analyzer

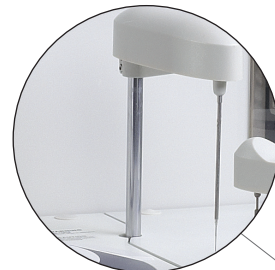
# BS-220E

## Chemistry Analyzer

Smart, Versatile, Easy

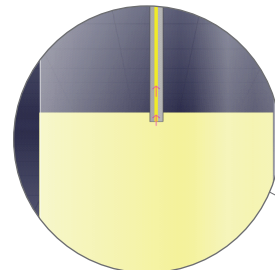
### Intelligent collision protection

- Vertical & horizontal collision
- Audible alarm
- Ensure operator safety



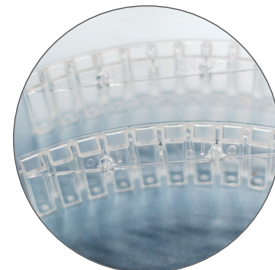
### Smart probe function

- Effective liquid level detection
- Liquid level tracking
- Prevent short sampling



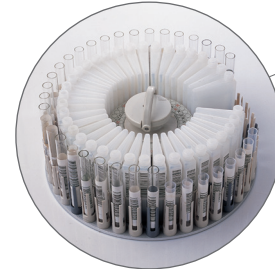
### Semi-permanent cuvettes

- Lower consumable cost
- Easy replacement
- Durable material, long lasting



### Reagent and sample cooling compartment

- 2~12°C continuous cooling
- Enhance reagent and sample stability



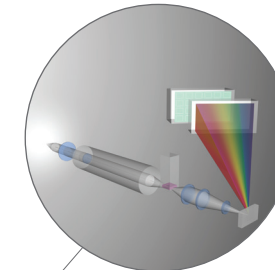
### Highly compatible reagent system

- Reagents, QC and CAL
- Metrological traceability



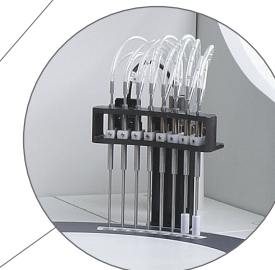
### Grating optic system

- 12 Wavelengths; up to 800nm
- Reversed optics
- Accomodate most chemistry assays



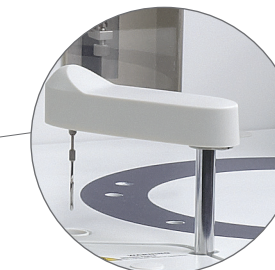
### 8-step washing station

- Enable lengthy operator walk-away time
- High quality cuvette washing
- Ensure optimal cleanliness with pre-heated detergent and water



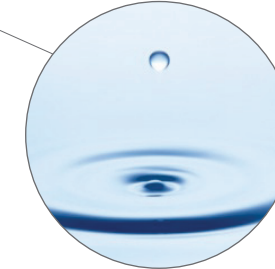
### Standalone mixing bar

- Effectively minimizes potential carry-over
- Innovative design
- Minimal maintenance; simple installation



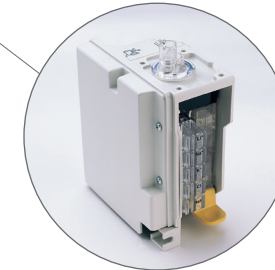
### 150 µl minimum reaction volume

- Lower reagent consumption
- Long term saving on reagent cost



### 3-channel integrated ISE module

- Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup> electrodes
- Durable assemble
- Highly efficient electrolytes analysis



- Throughput: 200 tests per hour for chemistry
- Grating optical system with 12 wavelengths
- 8-step auto wash system with pre-heated detergent and water
- 80 semi-permanent cuvettes
- High efficiency standalone mixing bar
- 150µl minimum reaction volume
- Liquid level detection and tracking
- Vertical & horizontal collision protection
- Intuitive; user-friendly operation software
- Highly compatible reagent system : reagents, QC & Calibrators ready for use



Mindray solution for clinical chemistry

After more than 10 years of research and development on reagents, Mindray can now provide 48 parameters of dedicated reagents(more than 17 others are coming), covering hepatic, renal, cardiac, lipids, diabetes, pancreatitis, inorganic ions and immunalassays, etc.,together with original calibrators with metrological traceability as well as controls for BS-220E chemistry analyzer.



Calibrators with traceability:

Reference Method (Certified by 'Joint Committee for Traceability in Laboratory Medicine' (JCTLM))

- International Federation of Clinical Chemistry and Laboratory Medicine (IFCC)
- National Institute of Standards and Technology(NIST)
- Centers for Disease Control and Prevention (CDC, USA)
- American Association for Clinical Chemistry (AACC)

Reference Material

- Institute for Reference Materials and Measurements (IRMM) standards
- National Institute of Standards and Technology (NIST) standards
- World Health Organization (WHO) standards
- Japan Committee for Clinical Laboratory(JCCLS) standards

Chemistry Reagents

<b>Hepatic Panel</b>	<b>Lipid Panel</b>
Alanine Aminotransferase (ALT) Aspartate Aminotransferase (AST) Alkaline Phosphatase (ALP) γ-GlutamylTransferase (γ-GT) Direct Bilirubin (D-Bil) DSA Method Direct Bilirubin (D-Bil)VOX Method Total Bilirubin (T-Bil) DSA Method Total Bilirubin (T-Bil)VOX Method Total Protein (TP) Albumin (ALB) Total Bile Acids (TBA) Prealbumin (PA) Cholinesterase (CHE) α-L-fucosidase (AFU) 5'-nucleotidase (5'-NT)	Total Cholesterol (TC) Triglycerides (TG) HDL-Cholesterol (HDL-C) LDL-Cholesterol (LDL-C) Apolipoprotein A1 (ApoA1) Apolipoprotein B (ApoB) Lipoprotein(a) [Lp(a)]
	<b>Immune Panel</b>
	Immunoglobulin A (IgA) Immunoglobulin G (IgG) Immunoglobulin M (IgM) Complement C3 (C3) Complement C4 (C4)
	<b>Diabetes Panel</b>
	Glucose (Glu) GOD-POD Method Glucose (Glu) HK Method Hemoglobin A1c (HbA1c) Fructosamine (FUN) β-Hydroxybutyrate(β-HB)
<b>Renal Panel</b>	<b>Rheumatism Panel</b>
Urea (UREA) Creatinine (CREA) Modified Jaffé Method Creatinine (CREA)Sarcosine Oxidase Method Uric Acid (UA) Carbon dioxide (CO2) Microalbumin β2-Microglobulin (β2-MG) Cystatin C (CysC) Retinol binding protein( RBP)	C-reactive protein (CRP) Rheumatoid Factor (RF) Antibodies Against Streptolysin O (ASO)
<b>Cardiac panel</b>	<b>Pancreatitis Panel</b>
Creatine Kinase (CK) Creatine Kinase-MB (CK-MB) Lactate Dehydrogenase (LDH) α-Hydroxybutyrate Dehydrogenase(α-HBDH) Homocysteine (HCY)	α-Amylase (α-AMY) Lipase (LIP)
<b>Inorganic &amp; Anemia</b>	<b>Lung Panel</b>
Iron (Fe) Ferritin (FER) Transferrin (TRF) Calcium (Ca) Magnesium (Mg) Phosphate Inorganic (P) Glucose-6-phosphate dehydrogenase (G6PD)	Adenosine Deaminase (ADA) Angiotensin Converting Enzyme(ACE)